


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P13946-oll	FOR FURTHER ACTION		See Form PCT/PEA416
International application No. PCT/EP2004/053149	International filing date (<i>day/month/year</i>) 29.11.2004	Priority date (<i>day/month/year</i>) 12.12.2003	
International Patent Classification (IPC) or national classification and IPC H04M1/725			
Applicant SONY ERICSSON MOBILE COMMUNICATIONS AB et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i>) a total of 6 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 10.10.2005		Date of completion of this report 20.01.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer de Biollé, L Telephone No. +31 70 340-3137	



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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**International application No.
PCT/EP2004/053149**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-18 as originally filed

Claims, Numbers

1-36 received on 10.10.2005 with letter of 05.10.2005

Drawings, Sheets

1/7-7/7 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-33
	No: Claims	34-36
Inventive step (IS)	Yes: Claims	1-33
	No: Claims	34-36
Industrial applicability (IA)	Yes: Claims	1-36
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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Re Item V.

1 Reference is made to the following documents:

D1: US-A-5 301 360 (GOLDBERG ARTHUR M) 5 April 1994 (1994-04-05)

D2: US-A-5 859 522 (THEOBALD DAVID J) 12 January 1999 (1999-01-12)

2 Independent claim 1

2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (see D1, col. 1, line 56 to col. 2, line 20 and col.3, line 56 to col. 4, line 9): Method for identifying a communication interface of an electronic unit attached to a connector on an electronic device, comprising the steps of :

- generating a voltage pulse in said device on a pin of said connector
- measuring the resulting voltage on another pin of said connector
- comparing the measured voltage with predetermined voltage criteria
- performing communication interface identification of said unit dependent on said comparison

The subject-matter of claim 1 differs from this known method in that the voltage measurement is performed on the same pin of the connector.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

2.2 The problem to be solved by the present invention may be regarded as how to perform identification of a communication interface on fewer pins of a system connector and consequently being able to use the same pins for different communication interfaces.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

No prior art document suggests or hints at the feature of identifying an accessory unit attached to a connector of an electronic device by generating a voltage pulse in the electronic device on a pin of the connector, measuring the voltage on the same pin and identifying the accessory unit by comparing the measured voltage with a predetermined criteria.

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3 Independent claims 24 and 25

The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent claims 24 and 25, which therefore are also considered new and inventive.

4 Claims 2-23 and 26-33 are dependent on claim 1 or 25 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

5 Independent claim 34

Claim 34 relates to an electronic circuit comprising an electric load devised to generate a dynamic voltage response on a pin when subjected to a voltage pulse on said pin. Any resonant circuit (eg. RC or RLC circuit) anticipates this claim. The subject-matter of said claim is therefore not new Article 33(2) PCT.

6 Dependent claims 35 and 36

Dependent claims 35 and 36 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step because the features of said claims appear to be design measures normally expected by the person skilled in the art.

Re Item VII.

1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.

2 Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT.

3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

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Re Item VIII.

- 1 The features "wherein said identity is dependent on ... / is determined by ..." in the apparatus claims 27 and 29 relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.

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CLAIMS

1. Method for identifying a communication interface of an electronic unit attached to a connector of an electronic device, comprising the steps of:

- 5
- generating a voltage pulse in said device on a pin of said connector;
 - measuring the voltage on said pin, as affected by a load in said unit;
 - comparing the measured voltage with predetermined voltage criteria; and
 - performing communication interface identification of said unit dependent on said comparison.

10

2. The method as recited in claim 1, wherein said step of performing identification is preceded by the step of:

- selecting identification process dependent on the value of said measured voltage.

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3. The method as recited in claim 1 or 2, wherein said step of performing identification is preceded by the step of:

- selecting identification process dependent on predetermined timing criteria.

20

4. The method as recited in claim 1, wherein said step of performing identification comprises the steps of:

- measuring dynamic behaviour of said voltage level; and
- allotting an identification address to said unit dependent on said dynamic behaviour.

25

5. The method as recited in claim 4, wherein said step of measuring dynamic behaviour comprises the steps of:

- measuring a time period during which said voltage holds a stable level; and
- measuring the value of said stable voltage level.

30

6. The method as recited in claim 5, wherein said identification address is

determined by the length of said time period and the magnitude of said voltage level value.

5 7. The method as recited in claim 5, wherein said identification address comprises two nibbles, one address nibble being selected dependent the length of said time period and one other nibble being selected dependent on the magnitude of said voltage level value.

10 8. The method as recited in claim 5, wherein said identification address is a two nibble hexadecimal number which is set dependent on predetermined time and voltage ranges.

15 9. The method as recited in claim 7, wherein a predetermined number is selected for said one address nibble if the length of said time period exceeds a predetermined maximum time period.

20 10. The method as recited in claim 2, comprising the step of:
- monitoring a control bus of said connector for a predetermined time period, dependent on if said measured voltage level meets predetermined criteria for digital attachable units.

11. The method as recited in claim 10, wherein said predetermined criteria for digital attachable units is a maximum threshold voltage level.

25 12. The method as recited in claim 10, in the event of data communication being detected over said control bus during said time period, comprising the step of:
- performing digital identification of said unit.

30 13. The method as recited in claim 10, in the event of no data communication being detected over said control bus during said time period, comprising the step

of:

- allotting an identification address comprising two nibbles to said unit, one address nibble for which a predetermined number is selected, and one other nibble for which a number is selected dependent on the magnitude of said voltage level value.

14. The method as recited in claim 1, comprising the step of:

- repeatedly generating said voltage pulse with a predetermined repetition frequency.

15. The method as recited in claim 1, comprising the steps of:

- repeatedly generating said voltage pulse with a predetermined repetition frequency characteristic; and

- adapting said repetition frequency to a mode of operation for said connector, by applying a first repetition frequency in an idle mode for said connector; and by applying a second repetition frequency, higher than said first repetition frequency, in an active mode for said connector, with an attached unit.

16. The method as recited in claim 1, wherein said step of performing

identification includes the step of allotting the unit an identification address, the method further comprising the step of:

- accessing a data memory using said identification address for retrieving operational data associated with said unit.

17. The method as recited in claim 16, wherein said data memory is located in said electronic device.

18. The method as recited in claim 16, wherein said data memory is located in said electronic unit.

19. The method as recited in claim 16, comprising the steps of:

- establishing a connection over a communication network for accessing said memory; and
- downloading operational data relating to said unit to said electronic device.

5 20. The method as recited in claim 16, comprising the step of:

- making adjustments dependent on the attached electronic unit to said electronic device, based on said operational data.

10 21. The method as recited in any of the preceding claims, wherein said electronic device is a radio communication terminal, and said electronic unit is an accessory which is attachable to said radio communication terminal.

15 22. The method as recited in any of the preceding claims, wherein said identity is representative of a class of electronic units.

20 23. The method as recited in any of the preceding claims, wherein said identity is unique for said electronic unit.

25 24. Computer program product, comprising computer program code stored in memory means, which is executable by means of a micro processor in an electronic device for performing the steps according to any of the previous claims 1 - 22.

30 25. System for identification of an electronic unit having a communication interface comprising a first connector attachable to a system connector of an electronic device, wherein

- the electronic device comprises a voltage pulse generator connected to an identification pin of the system connector,
- a first pin of the first connector, adapted to be coupled to the identification pin upon attachment of the first connector to the system connector, is coupled to an electronic circuit in the electronic unit,

- the electronic circuit constitutes an electric load which is selected to represent an identity for said communication interface,
- the electronic device comprises identification means for measuring a voltage response from the communication interface, comparing the measured voltage with predetermined voltage criteria, and performing communication interface identification of said unit dependent on said comparison, **characterised in** that the electric load is connected between said first pin and ground, and in that the identification means are connected to measure the voltage response on the identification pin.

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26. The system as recited in claim 25, **characterised in** that said circuit comprises a resistive component, wherein said identity is dependent on the ohmic resistance of said resistive component.

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27. The system as recited in claim 25 or 26, **characterised in** that said circuit comprises a capacitive component, wherein said identity is dependent on the dynamics of said circuit.

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28. The system as recited in claim 26 and 27, **characterised in** that said circuit is devised to generate a dynamic load, when subjected to a voltage from an attached electronic device, which load holds a substantially stable voltage level over said connector for a predetermined time period, and then triggers said voltage to rise.

25

29. The system as recited in claim 28, **characterised in** that said identity is determined by the duration of said predetermined time period and said voltage level.

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30. The system as recited in any of the previous claims 25 to 29, **characterised in** that said electronic unit comprises a second connector to which said circuit is connected, to which second connector an additional electronic unit

electronic unit may be cascadably attached.

31. The system as recited in any of the previous claims 25 to 30,
characterised in that said electronic unit is an accessory which is attachable to
5 an electronic device in the form of a radio communication terminal.

32. The system as recited in any of the previous claims 25 to 31,
characterised in that said identity is representative of a class of electronic units.

10 33. The system as recited in any of the previous claims 25 to 31,
characterised in that said identity is unique for said electronic unit.

34. An electronic circuit, for use in an electronic unit of a system as recited in
claim 25, **characterised in** that said circuit is connected between one first
15 connector pin and ground, and comprises an electric load devised to generate a
dynamic voltage response on said first connector pin when subjected to a
voltage pulse on said pin from an electronic device attached to the electronic
unit, wherein the dynamic behaviour of the voltage response determined by the
electric load is representative of the identity of a communication interface of
20 said electronic unit.

35. The electronic circuit as recited in claim 34, **characterised in** that said
circuit comprises a transistor, a resistive component, and an RC component,
wherein said transistor controls current from the electronic device to the resistive
25 component which initially generates a substantially stable voltage level for a
predetermined time period, where after said RC circuit triggers said voltage to
rise.

36. The electronic circuit as recited in claim 35, **characterised in** that said
30 time period is dependent on the characteristics of said transistor, and in that said
transistor is contained on an ASIC.